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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAZUHIRO TAKAGI, YASUHIRO WADA,
and RIKIO YAMAGUCHI

Appeal 2009-013000
Application 10/019,481
Technology Center 1600

Decided: June 29, 2010

Before ERIC GRIMES, TONI R. SCHEINER, and DONALD E. ADAMS,
Administrative Patent Judges.

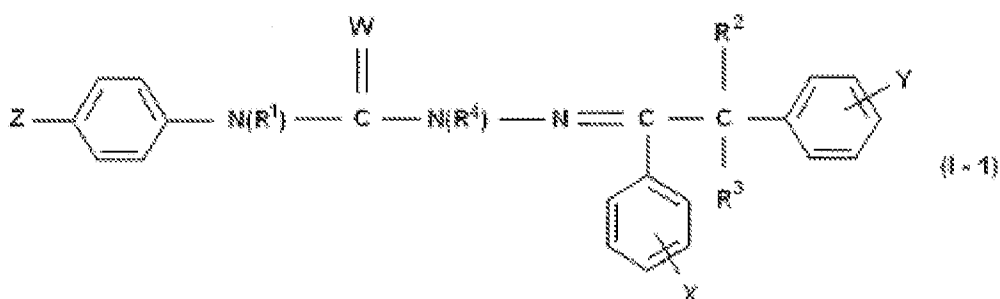
SCHEINER, *Administrative Patent Judge.*

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1, 10, and 13-47, directed to a method for controlling pests from the insect orders Isoptera, Hymenoptera, Orthoptera, and Psocoptera. The claims have been rejected on the grounds of anticipation and obviousness. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

Independent claim 1 is directed to a method for controlling a pest selected from the orders Isoptera (e.g., termites), Hymenoptera (e.g., ants), Orthoptera and Psocoptera which comprises applying to said pest or to a wooden part or to soil in the habitat of said pest an effective amount of a hydrazine compound of formula (I-1):



wherein R¹, R², R³, R⁴, X, Y, Z, and W represent various substituents specified in the Claims Appendix of Appellants' Brief on Appeal.

Claim 13 depends from claim 1, and specifies that "R¹ to R⁴ each denote hydrogen, X is trifluoromethyl, Y is cyano, Z is trifluoromethoxy, and W is oxygen."

Independent claim 15 is directed to

[a] method for protecting houses or an article selected from construction materials, furniture, leather, fibers, vinyl articles, electronic wires and cables against a pest selected from the Rhinotermitidae, Termitidae, Kalotermitidae and Termopsidae families, which comprises applying an effective amount of a hydrazine compound of formula (I-1) . . . to said pest, a habitat or a nest of said pest, to a place at which occurrence of said pest is expected or to the article.

Independent claim 16 is directed to “[a] method for controlling a pest from the Formicidae family in crops, which comprises applying an effective amount of a hydrazine compound of formula (I-1) . . . to said crops, to soil surrounding said crops or to a nest of said pest.”

The Examiner rejected the claims as follows:

- Claims 1, 13-16, and 18-47 under 35 U.S.C. § 102(e) as anticipated by Treacy.^{1, 2}
- Claims 1, 10, and 13-47 under 35 U.S.C. § 103(a) as unpatentable over Stefferud³ and Takagi.^{4, 5}

We reverse the anticipation rejection, and affirm the obviousness rejection.

ANTICIPATION

The issue raised by this rejection is whether the evidence of record is sufficient to support the Examiner’s finding that Treacy discloses controlling an insect from the Isoptera, Hymenoptera, Orthoptera, or Psocoptera order by applying an effective amount of a hydrazine compound of formula (I-1) to the insect, soil, crops, wood, or other materials in the habitat of the insect.

¹ U.S. Patent 6,342,518 B1, filed March 9, 2000, and issued January 29, 2002 to Treacy et al.

² The rejection of claims 1, 10, and 13-47 under 35 U.S.C. § 102(a) as anticipated by Treacy has been withdrawn by the Examiner (Ans. 2).

³ L.S. Henderson, *Household Insects*, in THE YEARBOOK OF AGRICULTURE 469 (Alfred Stefferud ed., 1952).

⁴ U.S. Patent 5,543,573, issued August 6, 1996 to Takagi et al.

⁵ The rejection of claims 1, 10, and 13-17 under 35 U.S.C. § 103(a) as unpatentable over Treacy, Takagi, and Stefferud has been withdrawn by the Examiner (Ans. 3).

Findings of Fact

FF1 The Specification teaches that the claims encompass “applying the ant controller of the invention preventatively to places at which occurrence of ants is expected” (Spec. 26: 15-17).

FF2 For “application to wooden materials, the quantity of active ingredient ranges from 0.1 to 50 g per m²; and in case of soil treatment . . . the quantity of active ingredient ranges from 1 to 500 g per m²” (Spec. 26: 20-24).

FF3 Treacy describes an insecticidal composition “comprising as essential active ingredients a synergistically effective amount of a neuronal sodium channel antagonist and an arylpyrrole insecticide” (Treacy, col. 1, ll. 34-37).

FF4 According to Treacy, “synergism” refers to “a cooperative action encountered in a combination of two or more biologically active components in which the combined activity of the two or more components exceeds the sum of the activity of each component alone” (Treacy, col. 1, ll. 55-60).

FF5 According to Treacy:

The synergistic insecticidal composition of the invention is found to be highly active against a wide variety of lepidopteran and coleopteran insects such as *Helicoverpa zea* (cotton bollworm), *Heliothis virescens* (tobacco budworm), *Leptinotarsa decemlineata* (Colorado potato beetle), *Diabrotica* spp. (corn rootworm) and the like.

Further, the composition of the invention may be useful in the prevention and control of public health pests such as houseflies, mosquitoes, cockroaches, ants, termites or the like.

(Treacy, col. 7, ll. 26-35.)

FF6 The Examiner finds, and Appellants concur, that the neuronal sodium channel antagonist (compound Ia) used in Treacy's Example 1 is encompassed by compound (I-1) of the instant invention (Ans.5; Reply Br. 3). In addition, the Examiner finds that the compound required by instant claim 13 "is identical to compound (Ia) of Treacy" (Ans. 5).

FF7 Treacy teaches that the neuronal sodium channel antagonist and arylpyrrole insecticide components of the composition may be "appli[ed] to the insect, its food supply, breeding ground or habitat" (Treacy, col. 6, ll. 63-64), sequentially or in pre-mixed form (*id.* at col. 7, ll. 1-8).

FF8 According to Treacy, "the active ingredients of the composition . . . are highly synergistic when present at a ratio of neuronal sodium channel antagonist compound to arylpyrrole insecticide of about 1:10 to 1:50" (Treacy, col. 7, ll. 12-16).

FF9 Treacy's Example 1 shows that a solution containing 0.1 ppm of compound 1a applied to cotton leaves exhibits insecticidal activity against cotton bollworm, tobacco budworm, and pyrethroid-resistant tobacco budworm (Treacy, Tables I-III).

FF10 0.1 ppm is equal to 0.0001 g/L, or 0.1 mg/kg, or 0.00283 g/ft³, etc.⁶

Principles of Law

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). The initial burden of establishing

⁶ See e.g., http://www.engineeringtoolbox.com/ppm-d_1039.html

unpatentability rests on the Examiner, *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992). Nevertheless, there are exceptions where the record justifies shifting the burden to appellant to show a difference between the claimed invention and the prior art. As explained in *In re Best*, 562 F.2d 1252, 1254-1255 (CCPA 1977):

[W]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

“Whether the rejection is based on ‘inherency’ under 35 U.S.C. § 102, on ‘prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO’s inability to manufacture products or to obtain and compare prior art products.” *Id.* at 1255. “[W]hen the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

Analysis

The present claims require applying an amount of a hydrazine of formula I-1 effective to control an insect from the Isoptera, Hymenoptera, Orthoptera, or Psocoptera order to wood, soil, etc., whether or not other ingredients are applied in addition to the hydrazine.

Treacy teaches that the combination of a neuronal sodium channel antagonist and an arylpyrrrole insecticide, applied at a ratio of 1:10 to 1:50, is highly effective against a wide variety of lepidopteran and coleopteran insects, and suggests that the combination “may be useful in the prevention

and control of . . . houseflies, mosquitoes, cockroaches, ants, termites or the like” (Treacy, col. 7, ll. 32-35; FF5, FF8). As for specific effective amounts, Treacy’s Example 1 shows that hydrazine Ia (a compound encompassed by the present claims), on its own, is effective against cotton bollworm and tobacco budworm (lepidopterans) when applied to cotton leaves at a concentration of 0.1 ppm (FF9).

The present Specification, on the other hand, teaches that the disclosed compounds are effective in controlling insects from the orders Isoptera, Hymenoptera, Orthoptera, and Psocoptera when applied to wooden material in an amount ranging from 0.1 to 50 g per m², and from 1 to 500 g per m² when applied to soil (FF2).

Given the apparent difference between Treacy’s application rate and that asserted to be effective in the instant Specification, the evidence of record is insufficient to shift the burden to Appellants to establish that Treacy’s hydrazine compound, applied as directed by Treacy, would not inherently control insects from the Isoptera, Hymenoptera, Orthoptera, and Psocoptera orders. While it’s possible that compound Ia, applied as Treacy suggests to “public health pests such as . . . ants, [or] termites” (Treacy, col. 7, ll. 33-34; FF5), their “food supply, breeding ground or habitat” (*id.* at col. 6, ll. 63-64; FF7), would be effective at 0.1 ppm (or 0.0001 g/L) (FF9, 10), “[t]he mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (quoting *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991)) (internal quotation marks and citations omitted).

Conclusions of Law

The evidence of record is not sufficient to support the Examiner's finding that Treacy discloses controlling an insect from the Isoptera, Hymenoptera, Orthoptera, or Psocoptera order by applying an effective amount of a hydrazine compound of formula (I-1) to the insect, or to soil, crops, wood, or other materials in the habitat of the insect.

OBVIOUSNESS

The Examiner rejected claims 1, 10, and 13-47 as unpatentable over Stefferud and Takagi. The issue raised by this rejection is whether the prior art teaches or suggests applying a hydrazine compound of formula (I-1) to houses, wood, soil, or crops in an amount effective to control an insect from the Isoptera, Hymenoptera, Orthoptera, or Psocoptera order.

Findings of Fact

FF11 Takagi discloses hydrazinecarboxamide derivatives "suitable for controlling various insect pests such as agricultural insect pests, forest insect pests, horticultural insect pests, stored grain insect pests, sanitary insect pests, nematodes, etc." (Takagi, col. 62, ll. 8-11.) However, as emphasized by Appellants, Takagi "does not address any of the insect orders or families that are recited in the claims" (App. Br. 10).

FF12 According to Takagi, "the desired effect of the insecticide . . . can be obtained by applying the insecticide to . . . fruit trees, vegetables, other crops, flowers and ornament plants, soil, etc., or to the inside of a house or ditches around a house, in which the above-exemplified sanitary insect pests . . . appear or are expected to appear" (Takagi, col. 63, ll. 12-18).

FF13 Takagi teaches that:

The amount of the insecticide containing the hydrazinecarboxamide derivative of the general formula (I) . . . as an active ingredient is varied depending upon various factors such as purpose, insect pests to be controlled, a growth state of a plant, tendency of insect pests appearance, weather, environmental conditions, a preparation form, an application method, an application site and an application time. It may be properly chosen in the range of 0.1 g to 5 kg (in terms of the active ingredient) per 10 acres depending upon purposes.

(Takagi, col. 64, ll. 46-55.)

FF14 In addition, Takagi's Example 1 shows that a solution containing 500 ppm of compound A261 applied to cabbage leaves, and then dried, exhibits insecticidal activity against cutworm (Takagi, col. 65, ll. 50-64; Example 1; Table 7).

FF15 5 kg/10 acres is equal to 0.124 g/m². 500 ppm is equal to 0.5 g/L. Again, the present Specification teaches for "application to wooden materials, the quantity of active ingredient ranges from 0.1 to 50 g per m²; and in case of soil treatment . . . the quantity of active ingredient ranges from 1 to 500 g per m²" (Spec. 26: 20-24).

FF16 The Examiner finds, and Appellants do not dispute, that Takagi's compound 261, used in Example 14, is encompassed by formula (I-1) of the instant invention, and also reads on the narrower compound specified by present claim 13 (Ans. 6).

FF17 Stefferud teaches that termites, ants, wasps, crickets, etc. are among common household pests (Stefferud 469).

FF18 Declarant Dr. Oloumi-Sadeghi⁷ describes tests “conducted using Example No. 44 as a representative of the compounds (I-1) referenced in the claims of the application, and using compound A007 of *Takagi et al.* for comparison” (Decl. 5). According to Dr. Oloumi-Sadeghi, “compound A007 of *Takagi et al.* is among the examples which are taught by the reference to exhibit 100% mortality in each of the described investigations” (*id.*). “As shown on page 6 of the declaration, the inventive compound [44] and the Takagi compound [A007] differ only in what the present claims label the ‘Y’ substituent” (Reply Br. 6).

FF19 The results reported in detail by Dr. Oloumi-Sadeghi at pages 6-9 of the Declaration, and summarized on pages 6-7 of Appellants’ Reply Brief, show that instant compound 44 was “by far more effective and significantly better suited to achieve a control of” Argentine ants, harvester ants, and various termites than Takagi’s compound A007 (Decl. 9).

FF20 The substituents of Appellants’ compound 44 are as follows: R¹ to R⁴ each denote hydrogen, X is 3-CF₃ (trifluoromethyl attached at the 3-position), Y is 4-CN (cyano attached at the 4-position), Z is OCF₃, and W is oxygen (Spec. 11). We find that Takagi’s compound 261 is identical to compound 44 of the present Specification (Spec. 11). The Examiner notes that this same compound (Takagi’s compound A261/present compound 44) “was 100% effective at rates of 500 ppm against cutworm [Takagi’s Table 7], or 200 ppm [Takagi’s] (Table 8), against weevils” and furthermore, “was shown effective in the Declaration at 300 & 3000 ppm against Argentine & harvester ants” (Ans. 9).

⁷ Declaration of Dr. Hassan Oloumi-Sadeghi, filed April 11, 2006 under the provisions of 37 C.F.R. § 1.132.

Analysis

We agree with the Examiner's conclusion that the claimed invention is unpatentable over Takagi and Stefferud. According to the Examiner, Takagi's compounds "were known to have broad insecticidal effects on a large range of related and unrelated household pest insects" (Ans. 8) and Takagi suggests applying them to soil, crops, houses, and areas around houses. The Examiner finds that applying Takagi's hydrazinecarboxamide compound 261 (the compound used in Takagi's example 14), to wood, crops, houses, or soil at 0.1-5 kg/10 acres or "under conditions determinable . . . in accord with known factors of consideration" (*id.* at 7) "would result in the same control as of the instant invention as claimed, resulting in powder post beetle, mosquito, fly & sanitary Insect control . . . & also in control of the equivalent household pests identified by Stefferud;" i.e., termites and ants (*id.*).

Appellants contend that

a person of ordinary skill in the art had no basis on which to assume that the hydrazine compound disclosed by *Takagi et al.* would have an insecticidal effect on all the insects labeled by *Stefferud* as 'household insects' merely because *Takagi et al.* disclose that the hydrazine compound has an insecticidal effect on one type of insect falling within that definition.

(App. Br. 9). Similarly, Appellants contend "it would not have been obvious . . . to determine . . . what would constitute an effective amount of a hydrazine compound of formula (I-1) to control the specific pests targeted by the present invention" (*id.* at 9-10), and "a skilled artisan had no reasonable basis to predict whether the 'same control' would occur" (*id.* at 11).

In addition, Appellants rely on the Declaration of Dr. Oloumi-Sadeghi, in which Dr. Oloumi-Sadeghi concludes that

[Takagi] is by far too general to suggest or imply that any particular group of compounds within the realm of the hydrazinecarboxamide derivatives delineated by the reference exhibits a particularly noteworthy effect against any one of the specific pests which are controlled in accordance with the methods defined in the claims of [the] application . . . especially since the pests which are emphasized in *Takagi et al.* differ considerably from the pests referenced in the claims of this application.

(Decl. 4.)

Dr. Oloumi-Sadeghi further concludes that the results provided in Takagi's Tables 7 and 8 show "that different compounds even within a group of insecticides can vary considerably in their effectivity against one specific insect pest" (Decl. 5), and the results "further corroborate that a complete control of one insect pest which is achieved by a certain compound does not suggest or imply that the same compound will achieve a similar degree of control when it is applied to another insect pest" (*id.*).

Appellants' arguments are not persuasive. The present claims are not limited to applying a hydrazine of formula I-1 to insects per se, but also encompass applying the hydrazine to wood, soil, crops, and houses. Takagi suggests applying hydrazinecarboxamide derivatives to fruit trees, other crops, soil, houses or ditches around a house (FF12) in amounts similar to those asserted to be effective in the instant Specification (FF13-15). Stefferud provides evidence that insects like termites and ants (members of the orders Isoptera and Hymenoptera) are commonly attracted to these environments. Thus, the Examiner's finding that applying Takagi's

compound A261 (identical to the compound of present claim 13) as directed to crops, soil, or houses would inherently control termites and ants is fact-based and reasonable.

Nor are we persuaded by the Declaration of Dr. Oloumi-Sadeghi. The fact that compound 44 outperformed Takagi's compound A007 is irrelevant, because compound 44 is identical to Takagi's compound A261. As noted by the Examiner, compound 44 "was shown effective in the Declaration at 300 & 3000 ppm against Argentine & harvester ants" (Ans. 9; FF20). Takagi's compound A261 reads on the compound specified by present claim 13, and is encompassed by the generic formula I-1 of claim 1.

Finally, while we agree that the evidence supports Dr. Oloumi-Sadeghi's assertion that different compounds within a group of related compounds can vary considerably in their effectiveness against a specific pest, the claims don't require equal control of all members of the specified orders and families, or even any particular degree of control. Moreover, Appellants have not pointed us to a definition of "control" in the Specification. In any case, even though Takagi's compound A007 wasn't as effective as compound 44, it did kill some ants and termites.

Conclusions of Law

The prior art teaches or suggests applying a hydrazine compound of formula (I-1) to houses, wood, soil, or crops in an amount effective to control an insect from the Isoptera, Hymenoptera, Orthoptera, or Psocoptera order.

SUMMARY

- The rejection of claims 1, 13-16, and 18-47 under 35 U.S.C. § 102(e) as anticipated by Treacy is reversed.
- The rejection of claims 1, 10, and 13-47 under 35 U.S.C. § 103(a) as unpatentable over Stefferud and Takagi is affirmed.

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2006).

AFFIRMED

cdc

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